

ABSTRACT OF THE DISCLOSURE

An apparatus is disclosed which improves the optical monitoring of semi-conductor wafers undergoing chemical mechanical planarization (CMP). The apparatus consists of two assemblies. The first is a fiber optical wave-guide assembly installed within the polishing pad during the pad's construction. This assembly forms an integrated optical waveguide originating from the center of rotation of the polishing pad and terminating at a location within the wafer track. The second is a vacuum-attached hub containing optical and electronic devices, which couples light into the waveguide integrated into the polishing pad, provides light coupling to the center of rotation of the polishing pad, provides means for converting the received light into a signal that is transmitted to the CMP tool control system, and also has provision to prevent polishing slurry from coming in contact with the optical and electronic components. Alternately the vacuum-attached hub may contain optical devices only, which couples light into the waveguide integrated into the polishing pad and transmits the received light to the CMP tool control system.